

## **Part V**

# **Effluent-Dependent Water Bodies Task Force Report**

**REPORT OF THE**  
**EFFLUENT-DEPENDENT WATERS**  
**TASK FORCE**

**FOR CONSIDERATION**  
**OF ISSUES RELATED TO THE**  
**INLAND SURFACE WATERS PLAN**

October 1995

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# EFFLUENT DEPENDENT WATERBODIES TASK FORCE

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# EFFLUENT DEPENDENT TASK FORCE

## ATTENDANCE ROSTER

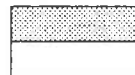
Name	Interest Category	M/A	April 26/27	May 18	June 22	July 27	Aug 24	Sept 28
Nancy Reichard (Facilitator)								
Syed Khasimuddin	SWRCB	M						
Gail Linck	SWRCB	A						
David Phillips	Industry	M						
Robert Hultquist	Public Health	M						
Terry Oda	USEPA	A						
David Smith	USEPA	M						
Randal Orton	POTW	A						
David Talcott	Stormwater	A						
Bill DePoto	Stormwater	M						
Greig Peters	RWQCB	M						
Daniel Diehr	Water Supply	A						
Mary Ellen Harris	Water Supply	M						
Dorothy Green	Environmental	M						
Nita Davidson**	C.D.P.R.	M						
Robert Robinson	Agriculture	M						
Brad Hagemann	RWQCB	A						
Sam Furuta	POTW	M						
Michael Kiado	Public Health	A						
Jaque Forrest*	Environmental	M						
John Sanford	Environmental	A						
Jack D. Linn	Fish & Wildlife	M						
Larry Walker								
John Behjan								
Michael Mitsch								
Gerald Bowes								
Dave Cohen								
Sharon Green								
Ron Gauthier								
Surendra Thakral								
Kathie Keber								
Glen Birdzel								

M = Member

A = Alternate

\* = Jaque Forrest substituted Dorothy Green.

\*\* = Nita Davidson decided to pull out after the April meeting.



= Present

= Absent

# EFFLUENT-DEPENDENT WATER BODIES TASK FORCE REPORT

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Appendix 1: Pima County Proposal re: data and implementation needs in relation to developing water quality objectives.

Appendix 2: Response of the Chemical-Specific Objectives Task Force re: feasibility, applicability, and legality of methods to develop water quality objectives.

Appendix 3: Copies of letters to fish and wildlife agencies sent by the Task Force.

# EFFLUENT-DEPENDENT WATER BODIES TASK FORCE REPORT

## 1.0 INTRODUCTION

The Effluent-Dependent Water Bodies Task Force met six times from April 1995 to September 1995 and for two mid-course meetings on June 1 and August 1, 1995. Task Force members and other participants discussed a number of issues pertaining to the unique effluent-dependent water bodies in the State. The outcome of discussions is presented in this report. The report is organized so that content reached by consensus is presented as regular text. Areas of disagreement or alternative language are presented as options or *italics* within the regular text.

## 1.1 GOAL STATEMENT

The goal of the effluent-dependent water bodies task force is to develop recommendations for the State Water Resources Control Board regarding how to provide reasonable protection for appropriate beneficial uses of effluent-dependent water bodies.

## 1.2 BACKGROUND

### Previous Efforts to Adopt Water Quality Regulations for Effluent-Dependent Water Bodies

The now rescinded Inland Surface Waters Plan (ISWP) and Enclosed Bays and Estuaries Plan (EBEP) identified some new categories of water bodies. "Category (a)" water bodies were considered to be:

"Water bodies, or segments thereof, that are not naturally perennial and, as of the date of adoption of this plan, support, or are planned to support within six years of plan adoption, aquatic habitat beneficial uses during the dry season as a result of the discharge of reclaimed water."

The plans included specific provisions for addressing these waters. The statewide chemical-specific water quality objectives were to be applied as performance goals to waters designated as Category (a) for purposes of regulating reclaimed water and non-point source discharges. Site-specific objectives were to be developed within six years for any constituents in these discharges for which the statewide water quality objectives were inappropriate. At the end of the six year period, if site-specific numerical water quality objectives had not been adopted, the statewide objectives applied. In addition, point source discharges which were not reclaimed water had to meet the statewide objectives upon plan adoption. The U.S. Environmental Protection Agency (USEPA) formal action on the plans included disapproval of the definition and performance goal approach for Category (a) water bodies.

Some recognition of these water bodies was made through the publication of "Guidance for Modifying Water Quality Standards and Protecting Effluent Dependent Ecosystems" (USEPA, Region 9, 6/92). This guidance described the possible application of four methods for modifying water quality standards: Total Maximum Daily Load (TMDL) analysis, Alternate Water Quality Criteria development, Ecological Benefit Comparison (Use Attainability Analysis), and Economic Feasibility Analysis (Use Attainability Analysis). The overall premise was that standards should be revised for such water bodies in order to help preserve or create in-stream flows that support desirable ecosystems.

### Water Reclamation and Effluent-Dependent Water Bodies

As water supplies become more scarce and wastewater quality improves, use of reclaimed water as a source of water has increased, particularly in southern California. The contribution of reclaimed water to the water supply provides a variety of economic and environmental benefits, both locally and elsewhere in the state. For instance, the use of reclaimed water reduces reliance on imported water supplies from northern California and the Colorado River basin. By easing demand for imported water, water reclamation may result in ecological benefits where these distant water supplies are located.

However, with the application of more stringent regulations to wastewater discharges, including those of unused reclaimed water, the costs of treatment could increase. These higher treatment costs may pose either an incentive or a disincentive to reclamation, depending on the specific circumstances (such as the feasibility of 100 percent reclamation with no discharge, the costs of the treatment deemed necessary to meet water quality objectives, and the cost of potable water relative to reclaimed water). Presently, for water reclamation to be viable, most projects require some discharge to a local water body during the "build-out" phase, seasonally or in other times of low demand. Discharge of reclaimed water to naturally ephemeral and intermittent streams, *and in some cases to perennial streams*, have resulted in the creation of perennial or interrupted water bodies with riparian habitat that would not exist in the absence of the discharge *or perennial water bodies with changed habitat*. New *or changed* habitats may be beneficial to various types of species.

### 1.3 PROBLEM STATEMENT

Effluent-dependent water bodies are not currently addressed by statewide water quality objectives and beneficial use categories. In the new statewide water quality control plans, therefore, the task force supports defining these water bodies, determining the appropriate beneficial uses, and describing how water quality objectives can be derived to protect the beneficial uses. The task force proposes an approach different from that described in the previous plans, as the previous approach was unacceptable to USEPA. Additionally, the proposed approach includes beneficial uses in addition to aquatic habitat.

## 1.4 DEFINITIONS

Ephemeral Stream: a stream, or reach of stream, that flows briefly only in response to precipitation or snow melt in the immediate locality and whose channel is above the region's water table.

Intermittent Stream: a stream, or reach of stream, that flows only at certain times of the year as when it receives flow from springs, melted snow, localized precipitation, or a controlled source such as a dam or water treatment plant.

### OPTION 1:

Effluent-Dependent Water Body: a water body, or segments thereof, in which the non-storm flow is primarily attributable (more than 50%) to discharges from anthropogenic sources excluding reservoir releases.

### OPTION 2:

Treated Effluent-Dependent Water Body: a water body, or segments thereof, in which the non-storm flow is primarily attributable (more than 50%) to treated discharges from anthropogenic sources excluding reservoir releases.

### OPTION 3:

Treated Wastewater-Dependent Water Body: a water body, or segments thereof, (1) for which the non-storm flow is primarily attributable to treated discharge; and (2) that, in the absence of a discharge referred in (1) and other primarily anthropogenic surface or subsurface flows, would be considered an ephemeral or intermittent water body.

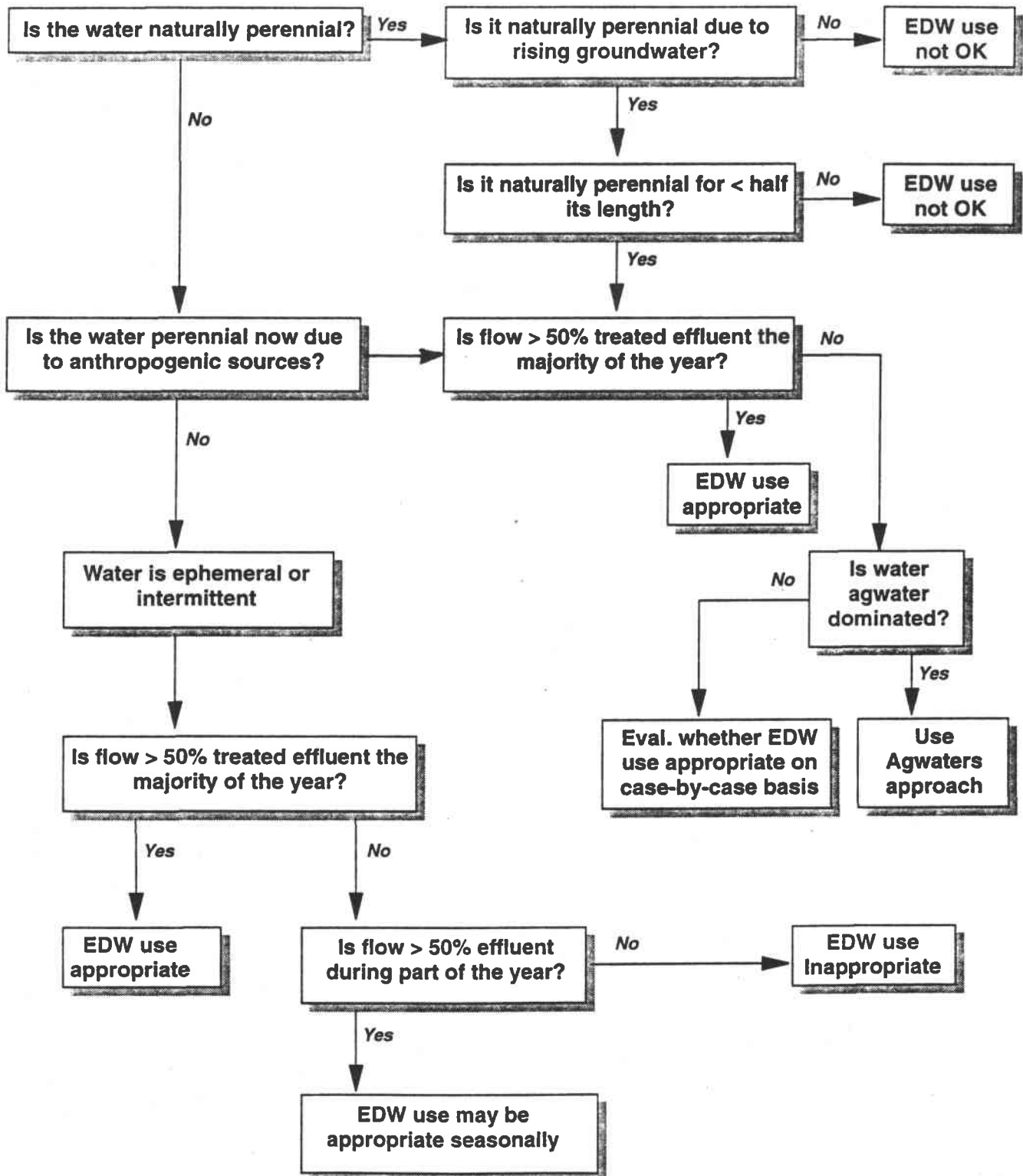
Untreated Discharge-Dependent Water Body: a water body, or segments thereof, (1) for which the non-storm flow is primarily attributable to untreated discharge; and (2) that, in the absence of a discharge referred in (1) and other primarily anthropogenic surface or subsurface flows, would be considered an ephemeral or intermittent water body.

### OPTION 4:

Effluent-Dependent Water: a water body, or segments thereof, for which (1) the non-storm flow is primarily attributable to treated discharge, and (2) that, in the absence of a discharge referred to in (1), other primarily anthropogenic surface or subsurface flows, or surface or subsurface flows affecting less than half its length caused by naturally occurring rising groundwater, would be considered an ephemeral or intermittent water body (see Figure 1-1, Flowchart for Evaluating Applicability of EDW Aquatic Life Use subcategories).



# Flowchart For Evaluating Applicability of EDW Aquatic Life Use Subcategories



## 1.5 RELATIONSHIP TO AGRICULTURAL WATERS TASK FORCE

The SWRCB established two task forces to consider special types of water bodies, the Effluent-Dependent Water Bodies Task Force and the Agricultural Waters Task Force. These two task forces have been meeting independently, although there is some overlap in attendees and membership. The intent of the task forces is to address issues unique to, and establish categories for, effluent-dependent water bodies in the ISWP.

There also is overlap in the definitions considered by the two task forces. This overlap may cause some concern because similar issues may have been addressed differently by the two task forces; however, the overlapping attendees have somewhat alleviated this situation. The state should minimize the differences in the promulgation of the ISWP. Finally, any remaining gray area will be resolved when a specific water body is designated into a special category.

## 2.0 LIST OF TASK FORCE MEMBERS AND ALTERNATES

The following is a list of Task Force members and alternates who participated in the development of the report and represented interest groups.

Nancy Reichard (Facilitator)	Center for Resolution of Environmental Disputes
Syed Khasimuddin	SWRCB
Gail Linck	SWRCB
David Phillips	U.C. Davis
Bob Hultquist	CA. Dept. of Health Services
Terry Oda	USEPA
Dave Smith	USEPA
Randal Orton	Las Virgenes Municipal Water District
Dave Talcott	City of Los Angeles
Bill DePoto	L.A. Co. Dept. of Public Works
Grieg Peters	RWQCB-9
Dan Diehr	San Diego County Water Authority
Mary Ellen Harris	Eastern Municipal Water District
Dorothy Green	Heal the Bay
Nita Davidson	CA Dept. of Pesticide Regulation
Robert Robinson	Coachella Valley
Jack D. Linn	CA. Dept. of Fish & Game
Brad Hagemann	RWQCB-3
John Sanford	Environmental Alliance
Sam Furuta	Los Angeles County Sanitation District
Michael Kiado	CA. Dept. of Health Services
Jaque Forrest	Heal the Bay

### **3.0 ISSUES ADDRESSED**

The following sections present the results of the Task Force discussions regarding beneficial uses, water quality objectives, implementation, policy options, and other issues.

A three-step process is used by the SWRCB to protect and enhance the quality and quantity of the State's inland surface waters. This process consists of:

- (i) The designation of beneficial uses (covered in Section 3.1).
- (ii) The identification of water quality objectives to protect those uses (covered in Section 3.2).
- (iii) The development of programs to implement and ensure compliance with (i) and (ii) (covered in Section 3.3).

The Task Force has agreed in principle that the beneficial uses of effluent-dependent water bodies should be reviewed and revised where necessary to take into account their unique character as created water bodies whose aquatic life depends on both effluent quantity and quality. Assuming the State designates beneficial uses specifically for effluent-dependent water bodies, the next step would be the identification of water quality objectives to protect those uses.

### **3.1 BENEFICIAL USES**

In order to more accurately reflect the variety and character of inland surface water bodies in the State, and to allow for the proper level of protection for all such water bodies, including existing and potential effluent-dependent water bodies, the Task Force believes that it would be desirable to establish several new categories and subcategories for several existing beneficial uses. After an official listing of subcategories is established, the appropriate subcategories which are applicable for each water body or segment thereof could then be identified. Based on the combination of natural conditions, and any existing effluent-dependent condition, each water body would be designated with the proper beneficial use designation.

To satisfy the federal requirement that the State establish numerical objectives for all priority pollutants for which the USEPA has developed water quality criteria, it will be necessary to establish water quality objectives which are appropriate for the new beneficial uses.

The relative sensitivity of the community of aquatic life which becomes established within an effluent-dependent water body may be different from that found in a non-effluent-dependent water body. In the extreme case (where the perennial presence of water in a water body is completely dependent on a discharge of effluent), the existence of most of the aquatic life is also dependent on the effluent. Efforts to develop numerical objectives for such effluent-dependent water bodies should not ignore the fact that the physical presence of the aquatic life is proof of a level of protection for those species.

When determining the proper level of protection for effluent-dependent water bodies, we believe that consideration must be given to the alternative conditions which would exist within the water body in the absence of effluent. In the semi-arid southwest, many streams which were naturally ephemeral or intermittent have developed some perennial flow due to human uses and releases of water within the watersheds of these streams. The presence of this effluent has led to the establishment of aquatic species which would otherwise not occur within the streams. The Task Force believes that the minimum level of protection which is required for such effluent-dependent aquatic species should generally bear a relationship to the quality of the water which created the aquatic habitat. However, in situations where full attainment of beneficial uses could be achieved with better water quality, Regional Boards may wish to pursue additional water quality improvements on a site-specific basis.

New subcategories addressing human health protection were developed. For all of the new uses, exposure scenarios will have to be developed that will result in appropriate human health protective water quality objectives. Those human health-related uses examined were: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Recreation, Fish Consumption, Sport Fishing, and Ground Water Recharge.

The following are examples of beneficial use categories and subcategories which could be developed for different water bodies and the task force's ideas concerning their application to effluent-dependent water bodies.

The creation of new subcategories of beneficial uses is one possible way to provide the proper level of protection for various water bodies of the State. The Task Force has identified, for consideration, use designations that could apply to effluent-dependent water bodies. These uses, including previously designated (current) beneficial uses which the Task Force identifies as potentially applicable to effluent-dependent water bodies, are described below. However, the uses listed may not all be applicable to a given water body, and some will need to be designated on a site-specific basis.

### 3.1.1 CURRENT BENEFICIAL USE DESIGNATIONS

Agricultural Supply [for Food Sources] (AGR-1): Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing. [Note: The language in brackets modifies current AGR use designation.]

Industrial Service Supply (IND): Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

### 3.1.2 POSSIBLE SUBCATEGORY BENEFICIAL USE DESIGNATIONS

Municipal and Domestic Indirect Supply (MUN-2): Uses of water for community, military, or individual water supply systems after conveyance, storage, blending, and/or treatment.

Municipal and Domestic-Indirect Drinking Water Supply (MUN-2): Indirect uses of surface or ground waters for community, military, or individual drinking water supply systems, assuming additional treatment to become suitable for potable use.

Agricultural Supply for Non-Food Sources (AGR-2): Uses of water, excluding direct use on food crops, for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Groundwater Recharge-Drinking Water Supply (GWR-1): Natural or artificial recharge of groundwater for purposes of future extraction for use as community, military, or individual drinking water supplies, following a residence time of 12 months or less before withdrawal from the aquifer.

Groundwater Recharge-Drinking Water Supply (GWR-2): Natural or artificial recharge of groundwater for purposes of future extraction for use as community, military, or individual drinking water supplies, following a residence time of 12 months or more before withdrawal from the aquifer.

Ground Water Recharge for Non-Drinking Water Supply (GWR-3): Uses of water for recharge of groundwater or halting of saltwater intrusion of freshwater aquifers, where no drinking water consumption occurs.

Ground Water Recharge-Domestic Use (GWR-2): Uses of water for recharge of ground water used as a domestic water supply, where sufficient blending to control the reclaimed water contribution, and reservoir retention occur prior to water extraction. Wellhead treatment may be required.

### 3.1.3 POSSIBLE NEW BENEFICIAL USE DESIGNATIONS

Effluent-Dependent Warm Freshwater Habitat (EDW): Uses of water that support ecosystems present in water bodies or segments thereof in which the annual average dry weather flow is primarily attributable (more than 50%) to discharges from anthropogenic sources, excluding reservoir releases.

Effluent-Dependent Warm Freshwater Habitat (EDW-1): Uses of water that support warm water ecosystems primarily attributable to treated discharge, including, but not limited to, preservation or enhancement of aquatic and riparian habitats, vegetation, fish, or wildlife including invertebrates.

Untreated Discharge-Dependent Warm Freshwater Habitat (EDW-2): Uses of water that support limited warm water ecosystems due to water quality conditions primarily attributable to untreated discharge, including, but not limited to, preservation or enhancement of aquatic and riparian habitats, vegetation, fish, or wildlife including invertebrates.

Full Body Contact Recreation (REC-1): Uses of water which cause the human body to come into direct contact with water to the point of complete submergence. The use is such that incidental ingestion of the water is likely to occur and certain sensitive body organs such as the eyes, ears, and nose may be exposed to direct contact with the water. [Note: This use would apply to waters which are deep enough in at least some reaches for full body contact to occur.]

Partial Body Contact Recreation (REC-2): Uses of water which cause the human body to come into direct contact with water, but normally not to the point of complete submergence. The use is such that ingestion of the water is not likely to occur, nor will sensitive body organs such as the eyes, ears, and nose normally be exposed to direct contact with the water. [Note: this use would apply to waters which are too shallow for full body contact to occur, and is different from the existing REC-1 and REC-2.]

Noncontact Water Recreation (REC-3): Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water. These uses include, but are not limited to, picnicking, sunbathing, hiking, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Fish Consumption (FC): Uses of water which support game species. Does not include water bodies designated as catch and release fisheries by the Department of Fish and Game.

Fish Consumption (FC-1): Uses of water by humans for harvesting fish or other aquatic organisms for commercial, recreational, and/or subsistence fishing consumption purposes.

Fish Consumption Limited (FC-2): Uses of water by humans for harvesting fish or other aquatic organisms for incidental or occasional recreational and/or consumption purposes, but not for commercial or long-term subsistence purposes.

Sport Fishing, Planted Species (SFH): Uses of water for recreational collection of sport fish or other organisms that are artificially planted in the water body.

## **3.2 WATER QUALITY OBJECTIVES**

This section summarizes the Task Force's discussions on water quality objectives for effluent-dependent water bodies and provides some potentially applicable methods for developing objectives.

### **3.2.1 OPTIONS**

The Task Force identified a number of methods which are potentially useable for developing objectives for effluent-dependent water bodies. Combinations of methods may be appropriate for developing objectives for particular beneficial uses and/or constituents. The methods are briefly described below. Many of the data and implementational needs associated with these

options are addressed in a Pima County proposal (Tables 1-3) (Appendix 1).

The Task Force did not review the feasibility, applicability, or legality of these objective development methods. However, the Task Force asked the Chemical-Specific Objectives Task Force to review a draft version of these methods and provide feedback concerning their feasibility, applicability, and legality with respect to objectives development. The Chemical-Specific Objectives Task Force provided some analysis of these methods on September 11, 1995 (Appendix 2).

### 3.2.2 DESCRIPTIONS OF POTENTIAL METHODS

1a. EPA Recalculation Method. Toxicity test results for species not found in effluent-dependent waters (EDWs) would be removed from the data set, results for species found in the EDWs would be substituted, and the objectives would be recalculated. This is the EPA preferred recalculation method. This method could facilitate consideration of all resident species or only indigenous species.

1b. Recalculation Method Used By Arizona. Toxicity test results for species not found in EDWs would be removed from the data set and the objectives would be recalculated. This is the method used by Arizona for EDWs and ephemeral aquatic and wildlife uses. This method could facilitate consideration of all resident species or only indigenous species.

2. Recalculate Using Water Effect Ratios or Other Site Specific Methods. EPA's water effect ratio (WER) method is usually used on a site-specific basis. Under this method, good quality "reference" EDWs could be identified, perhaps using biological indicators (poorly understood) or chronic toxicity test results (e.g., < 1TUC). WER method would be applied to recalculate objectives for these reference EDWs. The most protective values obtained through the WER studies for reference EDWs could potentially be applied as objectives for EDWs as a class. Alternative statistical tools for extending WER results to EDWs as a class may exist, but have not been discussed in detail. This method conceivably provides a basis for establishing EDW objectives based on empirical studies of EDW ecosystems and ambient water quality.

In addition to the WER method, EPA has developed other methods for adjusting EPA-recommended national water quality criteria. These include adjustment of the acute-to-chronic ratio and adjustment of the bio-concentration factor.

3a. Develop New Criteria Based On Local Species. Sensitive species resident in reference EDWs would be identified based on field studies. Criteria would be developed for EDWs through normal laboratory criteria development procedures. This method could facilitate consideration of all resident species or only indigenous species.

3b. Develop New Criteria Based On Ambient Conditions. Criteria would be developed for EDWs based on testing of ambient quality. This method could be implemented on a site

specific basis, for EDWs as a class, or for EDW groupings which reflect ecoregion, geographic, or other considerations. This method could include provisions that ambient quality must be sufficient to ensure that there is no ambient toxicity. This method could facilitate consideration of all resident species or only indigenous species.

**4. Use Lowest Toxicity Test Results.** Use the lowest genus mean acute value from all genera in the EPA data set, rather than statistical predictions of acute toxicity values for untested organisms, to calculate acute and chronic objectives. Arizona used this method to calculate objectives for non-EPA priority pollutants where there were insufficient acute test data to develop national criteria guidance using the EPA methodology.

**5. Lower the Protection Level.** Adjust EPA criteria for protection of 75% to 90% of all species nationwide rather than all species. It may be possible to justify lower protection levels in EDWs since application of criteria based on the full protection level could result in discharge removal and resulting harm to EDW aquatic ecosystems.

**6. Adjust the Averaging Periods.** For acute objectives use an averaging period of 2-4 days rather than 1 hour, and for chronic objectives use an averaging period of 30-60 days rather than 4 days. This approach may be more consistent with the testing periods actually used by EPA in developing national criteria for many pollutants.

For human health objectives it may be reasonable to use an averaging period of one year or longer. This approach is consistent with the lifetime exposure assumptions which EPA makes in calculating many of the human health criteria.

**7. Adjust the Allowable Frequency of Excursions.** Allow an excursion every 6 months to one year, rather than once every three years. Perhaps this could be supported by EDW-specific information concerning ecosystem recovery from excursions.

**8. Apply Drinking Water and Fish Consumption Objectives Separately.** Where both drinking water and fish consumption are designated uses, develop new objectives which address these uses separately rather than developing an objective based on a combination of exposure routes.

Where drinking water is a designated use, but fish consumption is not, apply only drinking water objectives. Where fish consumption is a designated use, but drinking water is not, apply only the fish consumption objectives.

**9. Adjust Cancer Risk Levels.** For carcinogens, base objectives on a cancer risk level of  $10^{-5}$  or  $10^{-4}$ .

**10. Change Application of State Policies Which Drive Uses and Objectives.** Some objectives are driven partly by state policy prescriptions (e.g., Drinking Water Policy, which drives designation of potential MUN uses).



11. Use Dissolved Metals In Lieu of Total Recoverable Metals. Develop new metals objectives based solely on the dissolved metals fraction rather than total recoverable metals.

### **3.3 IMPLEMENTATION**

#### **3.3.1 BACKGROUND**

California has two separate levels of decision-making in water quality, which are described in the Porter-Cologne Act. The SWRCB acts on a statewide level, and nine Regional Water Quality Control Boards (RWQCBs) act on a regional "watershed" level. Therefore, the actions desired by the task force could take place in a variety of scenarios.

Table 3-1 describes the alternative regulatory pathways that were considered by the Task Force. In general, these fall into three categories: state level implementation, regional level implementation, or combinations of the two levels.

#### **3.3.2 RECOMMENDATION**

The Task Force evaluated several process options ranging from addressing effluent-dependent water body needs entirely in Statewide Plans to addressing these needs primarily in Basin Plans. To the extent feasible, effluent-dependent water body needs should be addressed primarily in statewide plans. The Task Force recognizes that some effluent-dependent water body needs will be addressed at the RWQCB level.

#### **3.3.3 OPTIONS**

Due to time constraints, the Task Force was unable to fully consider the many detailed issues that will have to be addressed by the SWRCB in developing its approach to effluent-dependent water bodies. However, some options to address the various elements of the implementation process, followed by explanatory notes, are described below.

### **IMPLEMENTATION PROCESS OPTIONS**

#### **STEP 1:**

Recognize and define effluent-dependent water body types.

Implementation process:

SWRCB recognizes and defines effluent-dependent water body types in the Inland Surface Waters Plan and Enclosed Bays and Estuaries Plan (ISWP/EBEP).

**ALTERNATIVE REGULATORY PATHWAYS**  
**FOR EFFLUENT DEPENDENT WATERS (EDWs)**

#	DESCRIPTION	STATE PLANS	BASIN PLANS
1	EDW-SPECIFIC WQOs <sup>1</sup>		
1A	Address in State Plans	Define EDWs Identify all EDWs in State Adopt EDW-specific WQOs	No action necessary
1B	Address partially in State Plans and partially in Basin Plans	Define EDWs Adopt EDW-specific WQOs	Identify all EDWs in Basin Adopt EDW-specific WQOs from State Plan for each EDW
1C	Address primarily in Basin Plans	Define EDWs Apply statewide WQOs to all waters (including EDWs)	Identify all EDWs in Basin Adopt EDW-specific WQOs
2	EDW-SPECIFIC USES <sup>2</sup>		
2A	Address in State Plans	Define EDWs Define EDW use categories Identify and categorize EDWs by use category Adopt WQOs appropriate for each use category and EDW	No action necessary
2B	Address partially in State Plans and partially in Basin Plans	Define EDWs Define EDW-specific use categories Adopt appropriate WQOs for each use category	Identify and categorize EDWs by use category Adopt EDW-specific WQOs from State Plan for each EDW
2C	Address primarily in Basin Plans	Define EDWs Define process for adopting appropriate WQOs for EDWs	Define EDW-specific use categories Identify and categorize EDWs by use category Adopt appropriate WQOs for each use category and EDW pursuant to Plan process
3	SSO PROCESS	Adopt Existing Uses Describe and adopt SSO process	Where appropriate, adopt SSOs for EDWs pursuant to Plan process
4	UAA PROCESS	Adopt Existing Uses Apply Statewide WQOs to all waters (including EDWs)	Where appropriate, revise uses for EDWs pursuant to EPA process and adopt WQOs pursuant to Plan process

<sup>1</sup>There may be different EDW-specific WQOs for different types of EDWs.

<sup>2</sup>There may be different use categories for different types of EDWs.

**STEP 2:**

Identify water bodies as effluent-dependent waters.

- 2a) Develop technical criteria for determining qualifications.
- 2b) Designate effluent-dependent water bodies meeting criteria.

Implementation process:

SWRCB develops criteria and adopts in ISWP/EBEP; RWQCB apply criteria and adopt lists of qualifying water bodies in Basin Plans, with appeal to SWRCB.

**STEP 3:**

Adopt new or modified beneficial uses and subcategories appropriate for effluent-dependent water bodies.

- 3a) Develop list of new or modified beneficial use categories and subcategories appropriate for effluent-dependent water body types in ISWP/EBEP.
- 3b) Decide which uses are generally appropriate for effluent-dependent water body types.

Implementation process:

SWRCB adopts new/modified use categories and subcategories and indicates which uses are generally appropriate for effluent-dependent water body types.

**STEP 4:**

Assign new beneficial use categories and subcategories to specific water bodies.

- 4a) Uses identified as appropriate are assigned categorically to waters designated as effluent-dependent water bodies.
- 4b) Current beneficial use designations that are potential (i.e., not attained since 1975) uses are removed (and replaced with new designations) through a categorical statewide Use Attainability Analysis.

Implementation Process:

Both steps could be carried out by the SWRCB or the RWQCBs.

**STEP 5:**

Develop water quality objectives appropriate for new beneficial use categories and subcategories of effluent-dependent water bodies.

- 5a) Identify scientifically defensible methods acceptable for recalculating water quality objectives.
- 5b) Recalculate water quality objectives that are applicable to new or modified beneficial use categories and subcategories for effluent-dependent water bodies (create matrix).
- 5c) Conduct attainability analysis to determine most stringent reasonably attainable objectives that are scientifically defensible<sup>1</sup> (include final objectives as separate table in ISWP/EBEP).

---

<sup>1</sup> For a description of a methodology for doing this analysis, see Larry Walker, "A Practical Approach for Assessing Compliance Costs in the Adoption of Water Quality Objectives," August 24, 1995

**Implementation process:**

SWRCB develops and adopts water quality objectives for effluent-dependent water bodies, by beneficial use.

**STEP 6:**

**Adopt program of implementation**

- 6a) Adopt program elements such as a policy for the use of compliance schedules, procedures and assumptions for translating water quality objectives to permit limits, etc. Provisions appropriate for effluent-dependent water bodies should be included where necessary. The Plans should specify the conditions under which exceptions can be made to designations of effluent-dependent water bodies, and for the use of site-specific objectives when the statewide water quality objectives for effluent-dependent waters are inappropriate. These provisions could be included in the Program of Implementation or in other sections of the Plans, as appropriate.

**Implementation process:**

SWRCB develops and adopts a program of implementation in the ISWP/EBEP.

**STEP 7:**

**Adoption of water quality objectives for specific water bodies.**

- 7a) Statewide water quality objectives applicable for effluent-dependent water bodies are applied categorically to the water bodies assigned to these water body types.
- 7b) Site-specific adjustments are made (through mechanisms such as changes in use designations or the development of site-specific water quality objectives) for specific water bodies where the statewide water quality objectives are found to be inappropriate.

**Implementation process:**

Option 1-- The SWRCB applies the statewide water quality objectives for effluent-dependent waters categorically to all water bodies assigned to effluent-dependent water body types. RWQCBs make site-specific adjustments.

Option 2-- The RWQCBs apply the statewide water quality objectives to specific water bodies, as well as make site-specific adjustments.

**STEP 8:**

**Implementation of water quality objectives in permits.**

- 8a) As existing waste discharge requirements are renewed, or new ones are issued, new water quality objectives will be reflected in effluent limitations in the permit.

**Implementation process:**

RWQCBs are responsible for issuance of waste discharge requirements.

## EXPLANATORY NOTES

1. This description of implementation process options does not include all steps of Basin Plan adoption (for example, adoption of statewide water quality objectives into Basin Plans or approval by SWRCB of Basin Plans).
2. Significantly different amounts of time will be necessary for implementation, depending on the allocation of responsibilities between the SWRCB and the RWQCBs. Specifically, a significantly shorter period of time will be required if Steps 2, 4, and 7 are done on a "categorical" basis at the state level, with the Regional Boards reviewing these and acting only on exceptions. However, if these steps must be carried out on a site-specific basis by the RWQCBs, several years will likely be necessary. Likewise, if currently designated uses can be changed using a "categorical" type of Use Attainability Analysis (UAA), the implementation process will be expedited significantly.
3. During Task Force deliberations, it was proposed that the SWRCB and the USEPA explore the possibility of conducting the UAA required to remove beneficial uses or replace current use designations with less protective uses on a "categorical" basis, meaning that the UAA would apply to all water bodies in a particular category. This would generally replace site-specific UAAs, although site-specific UAAs could be required on a case-by-case basis. The Task Force was unable to pursue this topic further, although the group recognized that this is a critical element of the implementation process.
4. (Note -- The Task Force did not discuss the following suggested recommendations) Regardless of whether the SWRCB or RWQCBs conduct particular steps, SWRCB should develop technical evaluation criteria for Steps 2, 4, 5, and 7. Because the Task Force was unable to develop recommendations at this level of detail, the SWRCB should consider convening a technical advisory committee to address these issues.

### 3.4 POLICY OPTIONS

The task force identified four major policy options and three possible levels of implementation. Most of the task force effort focused on examining the second approach.

#### 3.4.1 APPROACHES

##### EDW-Specific Water Quality Objectives

This approach would consist of maintaining the present beneficial use designations, but developing statewide water quality objectives up-front for effluent-dependent water bodies (EDWs). The existing Arizona water quality standards were reviewed as an example of this approach. Arizona has numeric objectives for both "effluent-dominated" and "ephemeral" waters, based on an "aquatic and wildlife" beneficial use. The Arizona standards were developed using lists of aquatic species found in such systems within the state. Toxicity test

results for species not found in EDWs were removed from the data set and the objectives recalculated. Arizona also modified the human health objectives by applying drinking water and fish consumption objectives separately, instead of developing new objectives based on the combination of the exposure routes.

Effluent data were obtained for publicly-owned treatment works (POTWs) and for stormwater in California. Constituents likely to exceed USEPA-recommended aquatic life and human health criteria were examined. These were modified according to the Arizona methods. It was seen that there would not be any significant reduction in attainability problems through these methods, particularly for stormwater. New water quality objectives will have to be developed, but there are other available methods.

The needs for developing this approach would be: to define EDWs in the new state plans, to identify all EDWs in the state, and to adopt EDW-specific water quality objectives statewide.

#### EDW-Specific Uses (Recommended Approach)

This approach consists of a two-step process. The first step is to modify the present designated beneficial uses such that the designated uses more accurately reflect the actual uses. The second step is to adopt water quality objectives appropriate for each use designation. The twenty-three adopted beneficial use categories existing in California were reviewed. Modifications to some of them were proposed, generally making a "1" and "2" type, it being assumed that the "2" would result in somewhat less stringent water quality standards than the "1". Both human health-based and aquatic life-based beneficial uses were studied.

Under this approach, the list of existing and modified beneficial use categories appropriate to EDWs would be presented to the state, along with a description of a process for developing water quality objectives for those uses. It is unclear in federal regulations if a Use Attainability Analysis (UAA) would be required prior to modifying uses.

The needs for developing this approach would be: to define EDWs in the new state plans, to define EDW-specific use categories, to identify and categorize all EDWs by use categories in the state, and to adopt appropriate water quality objectives for EDWs.

#### SSO Process

Under this approach, the new state water quality plans would not specifically address EDWs. Rather, any attainability problems would be addressed by the Regional Boards through the development of site-specific objectives (SSOs) pursuant to procedures described in the Water Quality Objectives portion of the plans. There was consensus that this was not a desirable approach, because of the resources required to develop SSOs for all EDWs.

## UAA Process

Under this approach, the new state water quality plans would not specifically address EDWs. Rather, any attainability problems would be addressed by the Regional Boards through the Use Attainability Analysis (UAA) process described in the federal regulations to be used when a non-existing use for a water body is unattainable. The national goal of "fishable-swimmable," along with the California policy of all surface waters being "drinkable" (potable water supply), may not apply to EDWs. The state may remove a designated use which is not existing, or establish sub-categories of a use through a UAA. This approach would also rely on the USEPA guidance for modifying water quality objectives for EDWs or some similar process adopted by the state.

The UAA process is generally considered to require significant data and be time-consuming. The acceptability of UAAs is another concern. For these reasons, there was consensus that this was not a desirable approach for EDWs.

### 3.4.2 LEVELS OF IMPLEMENTATION

California has two separate levels of decision-making in water quality unlike other states, due to the Porter-Cologne Act. The State Water Resources Control Board acts on a statewide level, and there are nine Regional Water Quality Control Boards acting on a regional "watershed" level. Therefore, the actions could take place in a variety of scenarios. The task force supports option 2, addressing effluent-dependent water bodies primarily in the state plans and partially in basin plans.

Option 1. Address entirely in state plans.

Option 2. Address primarily in state plans and partially in basin plans.

Option 3. Address primarily in basin plans.

## 3.5 OTHER ISSUES

### 3.5.1 PROTECTED SPECIES

The Effluent-Dependent Water Bodies Task Force expressed concern as a group on the lack of involvement of the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS) in this new statewide water quality planning effort. There were no representatives from either state or federal fish and wildlife agencies assigned to the task force. The group drafted letters to these agencies (Appendix 3) at the first meeting and, as a result, obtained one representative from the CDFG.

The concern is that the CDFG might hold up the state plan approval process or associated CEQA review by declaring lack of adequate protection of endangered and threatened species.

This happened recently in the triennial reviews of three Southern California Regional Basin Plans. The task force desires much more active and earlier consultation and resolution of issues related to water quality and protected species in the new state planning process, especially in relation to effluent-dependent water bodies.

One means to this was the development of a memorandum of understanding (MOU) between the State Water Resources Control Board and the CDFG that would describe and formalize some of the coordination efforts between these two agencies. A draft MOU was prepared, but not acted on by the task force. This draft MOU is part of the record.

#### **4.0 ISSUES NOT ADDRESSED**

At the April 26-27, 1995 Task Force meeting many issues that needed to be addressed were identified. Other issues were identified at subsequent meetings. Although most of the major issues were considered by the Task Force, others were not, either because the issues should have been addressed by other task forces or the Task Force did not have the resources necessary to address the issue to a reasonable extent. The following list of non-addressed issues may be useful for further consideration by the SWRCB.

- How should ephemeral waters be protected?
- At what level of water quality does the ISWP optimize the balance between the cost of producing reclaimed water and the benefits derived from both instream beneficial uses and water supply beneficial uses?
- Who should pay the cost of producing a beneficial use created by an EDW - the public serviced by the POTW, the beneficiaries, or the general public?
- Should the State's Drinking Water Policy be revised to encourage maximum production of reclaimed water or should POTW discharges be required to meet drinking water standards?
- Should the responsibility and cost of receiving water quality monitoring continue to be borne by the segment of the public served by POTWs or should they be assigned to the general public through reasonable budgets to the RWQCBs?
- Should the State's Antidegradation Policy be revised to provide for the protection of beneficial uses of State waters rather than existing water quality in cases where the existing water quality is better than necessary to protect those uses?
- Should the State's Anti-Backsliding Policy be revised to provide incentives for POTWs to reasonably do more than what is minimally needed to meet water quality standards?



- Should the same formal UAA/SSO process be required to add beneficial uses as is required to delete beneficial uses?
- How should stormwater standards be addressed?
- How should agricultural drainage be addressed?
- Should the UAA/SSO process be standardized and delineated in the ISWP?
- How can the ISWP be coordinated with non-point source programs?
- Should habitat maintenance (minimum/maximum flows) be addressed?
- Should multi-media concerns (i.e., transfer or migration of constituents to other media) be addressed?
- How can background concentrations of inorganics be addressed?
- How can the introduction of exotic species, either purposely or inadvertent, be addressed?
- Should incidental groundwater recharge be addressed separately from planned/deliberate groundwater recharge?
- How should the State's water quality research needs be addressed?
- Can the process to delist beneficial uses be standardized and streamlined?
- How should dilution/mixing zones be used to determine permit requirements?
- How can competing public interests be balanced?
- How are water bodies designated as being impaired?
- How can institutional barriers between various water managers (e.g., POTWs and water purveyors) be overcome?
- Can seasonal standards be utilized to define permit limits?
- How do the Task Force recommendations/options comply with existing federal and State laws and regulations?

Mr. Steve Schwarzbach

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representative ready to attend that meeting. The facilitator for this task force is Nancy Reichard and she can be reached at 707/822-5965. You may also call Jesse Diaz, Chief of the Division of Water Quality at 916/657-0756 or Dr. David C. Carlson, Chief of the Freshwater Standard Unit at 916/657-2188.

Sincerely,

Sam Furita  
Los Angeles City Public Works Dept.

*Bill Peroto for*  
Gary Hildebrand  
Los Angeles County Public Works Dept.

*David Phillips*  
David L. Phillips  
University of California at Davis

*Mary Ellen Harris*  
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Eastern Municipal Water District

*Dorothy Green*  
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*Terry Oda*  
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USEPA, Region 9

*Greig Peters*  
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RWQCB - San Diego

*David C. Carlson*  
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Robert Robinson  
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Maria Rca David Smith  
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Brad Hagemann  
RWQCB - Central Coast

*S. Khasimuddin*  
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cc: Joe Medlin, Field Supervisor  
U.S. Fish and Wildlife Service

**STATE WATER RESOURCES CONTROL BOARD**

UL R. BONDERSON BUILDING  
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O BOX 100  
CRAMENTO, CALIFORNIA 95812-0100  
16/657-2188  
AX 657-2388



APR 27 1995

Mr. Steve Schwarzbach  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
2800 Cottage Way, E-1803  
Sacramento, CA 95825

Dear Mr. Schwarzbach:

**U.S. FISH AND WILDLIFE SERVICE PARTICIPATION ON THE STATE WATER RESOURCES CONTROL BOARD PUBLIC ADVISORY TASK FORCE ON EFFLUENT DEPENDENT ECOSYSTEMS**

As you know, the State Water Resources Control Board (SWRCB) has initiated the process of developing a new Inland Surface Waters Plan (ISWP) and Enclosed Bays and Estuaries Plan (EBEP). The initial step in this process involves establishing eight public advisory task forces to develop recommendations for SWRCB staff regarding key issues related to developing the new plans. These task forces have been formed and are now completing the initial round of meetings. The U.S. Fish and Wildlife Service (USFWS) has previously agreed to participate on the Chemical Specific Objectives task force.

The Effluent Dependent Ecosystems task force met for the first day of its initial two-day session on April 26, 1995. A topic of great concern to task force participants which was discussed at length the first day is the lack of participation on this task force by the USFWS. The group was particularly concerned about the lack of USFWS involvement because: (1) USFWS plays a key role in implementing the Federal Endangered Species Act (ESA) and ESA issues will be relevant to the task force discussions, and (2) USFWS is a recognized source of biological expertise which our task force needs. The task force members are of the opinion that USFWS involvement with this task force is critical at this early stage in the process of developing the new ISWP/EBEP and will be much more productive than later in the public participation phase when task force recommendations have been formulated.

The undersigned task force participants request that USFWS assign staff to fully participate in the Effluent Dependent Ecosystems task force.

Should you have any questions regarding the task force's concerns on this issue, we invite you to attend the next task force meeting which is scheduled for May 18, 1995. However, we hope you will find it possible to have a staff person designated as the USFWS


Mr. John Turner

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we hope you will find it possible to have a staff person designated as the DFG representative ready to attend that meeting. The facilitator for this task force is Nancy Reichard and she can be reached at 707/822-5965. You may also call Jesse Diaz, Chief of the Division of Water Quality at 916/657-0756 or Dr. David C. Carlson, Chief of the Freshwater Standard Unit at 916/657-2188.

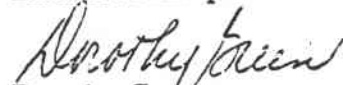
Sincerely,


Sam Furita  
Los Angeles City Public Works Dept.

  
Gary Hildebrand  
Los Angeles County Public Works Dept.

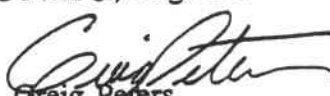
  
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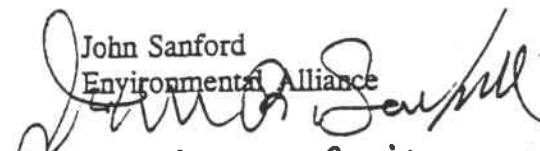
  
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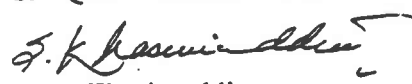
  
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cc: Mr. Boyd Gibbons, Director  
Department of Fish and Game

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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**APR 27 1995**

Mr. John Turner, Chief  
Environmental Services Branch  
Department of Fish and Game  
1216 Ninth Street, Room 1341  
Sacramento, CA 95814

Dear Mr. Turner:

**DEPARTMENT OF FISH AND GAME PARTICIPATION ON THE STATE WATER  
RESOURCES CONTROL BOARD PUBLIC ADVISORY TASK FORCE ON EFFLUENT  
DEPENDENT ECOSYSTEMS**

As you know, the State Water Resources Control Board (SWRCB) has initiated the process of developing a new Inland Surface Waters Plan (ISWP) and Enclosed Bays and Estuaries Plan (EBEP). The initial step in this process involves establishing eight public advisory task forces to develop recommendations for SWRCB staff regarding key issues related to developing the new plans. These task forces have been formed and are now completing the initial round of meetings. The Department of Fish and Game (DFG) has previously agreed to participate on all of these task forces except Effluent Dependent Ecosystems.

The Effluent Dependent Ecosystems task force met for the first day of its initial two-day session on April 26, 1995. A topic of great concern to task force participants which was discussed at length the first day is the lack of participation on this task force by the DFG. The group was particularly concerned about the lack of DFG involvement because: (1) DFG plays a key role in implementing the California Endangered Species Act (CESA) and CESA issues will be relevant to the task force discussions, and (2) DFG strongly opposed designation of Category (a) water bodies by the Los Angeles Regional Water Quality Control Board under the old ISWP, and (3) DFG is a recognized source of biological expertise which our task force needs. The task force members are of the opinion that DFG involvement with this task force is critical at this early stage in the process of developing the new ISWP/EBEP and will be much more productive than later in the public participation phase when task force recommendations have been formulated.

The undersigned task force participants request that DFG assign staff to fully participate in the Effluent Dependent Ecosystems task force.

Should you have any questions regarding the task force's concerns on this issue, we invite you to attend the next task force meeting which is scheduled for May 18, 1995. However,

## Appendices

POTENTIAL RESEARCH PROGRAMS  
for the Water Quality Research Project (WQRP)

TABLE I

## CHEMICAL CRITERIA AND STANDARDS

No.	Project Issue/Description	Proposed By
1.	<ul style="list-style-type: none"> <li>Identify chemicals and compounds of specific concern for arid West agencies and regulators in ephemeral and effluent-dependent ecosystems, including ammonia, arsenic, cadmium, copper, lead, diazation, zinc, mercury, molybdenum, phthalates, silver.</li> <li>All the above plus dissolved oxygen.</li> <li>All the above plus selenium.</li> <li>Dissolved oxygen.</li> <li>Develop data on pollutants and places presenting special compliance problems for dischargers (using existing data to the extent clean chemistry requirements are met).</li> </ul>	<ul style="list-style-type: none"> <li>PCWWM</li> <li>State Reg</li> <li>CO</li> <li>AZ, Phx, TX</li> <li>Region IX</li> </ul>
2.	<ul style="list-style-type: none"> <li>Develop criteria for species in ephemeral and effluent-dependent streams in the arid West.</li> <li>Develop criteria for these chemicals not currently included in national criteria documents (especially metals, pesticides and ammonia).</li> </ul>	<ul style="list-style-type: none"> <li>PCWWM, AZ</li> <li>CO</li> </ul>
3.	<ul style="list-style-type: none"> <li>Quantify the influence of hardness, alkalinity, and Total Organic Carbon regarding metals toxicity to aquatic and wildlife species in ephemeral and effluent-dependent ecosystems.</li> <li>Develop protocols for implementing hardness-dependent metals criteria in waters above 400 mg/l CaCO<sub>3</sub>.</li> </ul>	<ul style="list-style-type: none"> <li>PCWWM</li> <li>Region IX</li> <li>CO</li> <li>Riverside</li> <li>NV, CO, CA</li> <li>State Reg</li> </ul>
4.	<ul style="list-style-type: none"> <li>Develop laboratory toxicity data for arid West species for use in expanding the national data base to cover currently unrepresented species and to develop site-specific criteria, use designations and toxicity testing protocols.</li> </ul>	<ul style="list-style-type: none"> <li>Region IX</li> <li>State Reg</li> </ul>
5.	<ul style="list-style-type: none"> <li>Demonstrate analytical or other rational approach to apply water quality standards to stormwater flows, especially in the arid and semi-arid West.</li> <li>Develop alternative methods for managing and regulating stormwater discharges which are sensitive to arid Western settings.</li> </ul>	<ul style="list-style-type: none"> <li>PCWWM, TX</li> <li>State/Reg</li> <li>Region IX</li> </ul>
6.	<ul style="list-style-type: none"> <li>Investigate and quantify problems with dechlorination and the effectiveness of specific dechlorination systems to relieve individual agencies of making such determinations at each facility.</li> <li>Including chlorine residual compliance.</li> </ul>	<ul style="list-style-type: none"> <li>CO</li> <li>CA</li> <li>Riverside</li> </ul>
7.	<ul style="list-style-type: none"> <li>Quantify the fate and effects of nitrogen transformations that occur at the soil-water interface as surface waters percolate into ground waters.</li> </ul>	<ul style="list-style-type: none"> <li>CO</li> <li>Riverside</li> </ul>
8.	<ul style="list-style-type: none"> <li>Define the strength of metal-organic ligands that render metals non-bioavailable and define the conditions under which farfield release of bound metals into a bioavailable form are likely to occur.</li> </ul>	<ul style="list-style-type: none"> <li>CO</li> </ul>
9.	<ul style="list-style-type: none"> <li>Develop data necessary to assess public health risks due to subsistence fishing in drains and canals.</li> </ul>	<ul style="list-style-type: none"> <li>Region IX</li> <li>Phx</li> </ul>
10.	<ul style="list-style-type: none"> <li>Develop protocols for evaluating flows of ephemeral and effluent-dependent streams for TMDL, mixing zone, and effluent limit development purposes.</li> <li>Site-specific water quality standards for EDWs.</li> <li>Mixing Zones</li> </ul>	<ul style="list-style-type: none"> <li>Region IX</li> <li>CO</li> <li>CO</li> </ul>
11.	<ul style="list-style-type: none"> <li>Review fish consumption designated use in canals and waters where use does not currently exist.</li> </ul>	<ul style="list-style-type: none"> <li>CO, SRP</li> <li>AZ, CO, Phx</li> </ul>

POTENTIAL RESEARCH PROGRAMS  
for the Water Quality Research Project (WQRP)

TABLE II

ECOLOGICAL CRITERIA AND STANDARDS

No.	Project/Issue/Description	Proposed By
1.	<ul style="list-style-type: none"> <li>• Develop a list of indicator terrestrial and aquatic species in ephemeral and effluent-dependent streams in the arid West not currently included in national criteria documents.</li> <li>• Develop expanded list of species identified in ephemeral streams and EDWs.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- Utah</li> <li>- Region IX</li> </ul>
2.	<ul style="list-style-type: none"> <li>• Evaluate food chains representative of important arid West wildlife species, including threatened and endangered (T&amp;E) species.</li> <li>• Endangered Species Act (ESA) - impact on water quality standards; bioaccumulation; manmade systems implementation</li> </ul>	<ul style="list-style-type: none"> <li>- Region IX</li> <li>- Phx. CO</li> <li>- CO, CA</li> <li>- Riverside</li> </ul>
3.	<ul style="list-style-type: none"> <li>• Investigate the net ecological benefit of reuse and recharge programs in ephemeral and effluent-dependent streams in the arid West.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- Region IX</li> </ul>
4.	<ul style="list-style-type: none"> <li>• Develop measurable decision criteria for use attainability questions in ephemeral and effluent-dependent ecosystems: what level of use is attainable, what conditions fully protect a use, what data are needed to set site-specific criteria, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- CO</li> </ul>
5.	<ul style="list-style-type: none"> <li>• Investigate the issues involved in applying the biological integrity concept to ephemeral and effluent-dependent ecosystems of the arid West.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> </ul>
6.	<ul style="list-style-type: none"> <li>• Protection of habitats uses through minimum discharge requirements.</li> </ul>	<ul style="list-style-type: none"> <li>- Phx</li> </ul>
7.	<ul style="list-style-type: none"> <li>• Investigate the toxicity of metals and ammonia to salt-tolerant plant species important in arid West ecosystems.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- CO</li> </ul>
8.	<ul style="list-style-type: none"> <li>• Develop an "Effluent-Created Ecosystem" use definition for ephemeral and effluent-dependent ecosystems in terms of the physical, biological, and chemical characteristics found in these environments in the arid West.</li> <li>• Develop protocols for developing criteria appropriate for ephemeral and effluent-dependent waters (EDWs).</li> <li>• Develop arid West-sensitive protocols for evaluating economic impacts of standards implementation for use in use attainability analyses.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- CO</li> <li>- Region IX</li> <li>- Region IX</li> </ul>
9.	<ul style="list-style-type: none"> <li>• Review reuse criteria and standards for arid West ecosystems.</li> <li>• Develop data necessary to promote beneficial reuse of treated wastewater to protect and enhance aquatic ecosystems (e.g., to develop protocols for evaluating "net environmental benefits").</li> <li>• Review effluent reuse, water rights/ownership issues.</li> <li>• Determine best use of effluent as a water resource.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- Region IX</li> <li>- CA</li> <li>- Riverside</li> <li>- PCWWM</li> </ul>
10.	<ul style="list-style-type: none"> <li>• Analyze impact of tribal water quality standards.</li> </ul>	<ul style="list-style-type: none"> <li>- Phx</li> </ul>
11.	<ul style="list-style-type: none"> <li>• Evaluate tissue concentrations in aquatic life and wildlife for mercury, selenium and other bioaccumulative pollutants.</li> </ul>	<ul style="list-style-type: none"> <li>- Region IX</li> </ul>
12.	<ul style="list-style-type: none"> <li>• Review toxics standards guidelines - numeric narrative including effluent toxicity guidelines</li> </ul>	<ul style="list-style-type: none"> <li>- CO, NV, AZ</li> </ul>
13.	<ul style="list-style-type: none"> <li>• Develop data on actual biological systems needed to assess the feasibility of developing wildlife criteria, and to develop wildlife criteria (e.g., mercury).</li> </ul>	<ul style="list-style-type: none"> <li>- Region IX</li> <li>- Riverside</li> </ul>



POTENTIAL RESEARCH PROGRAMS  
for the Water Quality Research Project (WQRP)

TABLE III

WHOLE EFFLUENT TOXICITY (WET) TESTING

No.	Project/Issue/Description	Proposed By
1.	<ul style="list-style-type: none"> <li>• T&amp;E Species: <ul style="list-style-type: none"> <li>- Develop evaluations of whole effluent toxicity as it relates to T&amp;E species.</li> <li>- Modify protocols for biomonitoring testing to allow ceriodaphns/fatheads to be more tolerant of arid Western waters.</li> <li>- WET testing - Endangered Species Act</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Region IX, TX</li> <li>- Utah</li> <li>- TX</li> </ul>
2.	<ul style="list-style-type: none"> <li>• Support studies to determine the Method Detection Level (MDL).</li> <li>• Support studies to determine the Practical Quantification Level (PQL).</li> <li>• Determine WET testing variability/ compliance.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> <li>- PCWWM</li> <li>- Riverside</li> </ul>
3.	<ul style="list-style-type: none"> <li>• Investigate the relationship between ammonia toxicity, Ph and temperature.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM</li> </ul>
4.	<ul style="list-style-type: none"> <li>• Determine appropriate use of biomonitoring and WET testing in ephemeral and effluent-dependent ecosystems.</li> </ul>	<ul style="list-style-type: none"> <li>- PCWWM, AZ</li> <li>- AZ</li> </ul>

IMMEDIATE RESEARCH

Tables I-III present a preliminary menu of possible research topics for the WQRP. The specific individual research programs of the Project cannot be specified until the Working Group is established. One of the key concepts of the Project is the creation of the Working Group as a vehicle to maximize the participation by all the stakeholders in identifying and prioritizing the critical water quality issues of the arid West. There will be no problem finding enough for this Project to do; rather, the difficulty will be in prioritizing and allocating limited funds among the critical issues identified.

When Pima County and Region IX staff met in late November, 1994, to discuss the grant application process and requirements, all present agreed that some initial research and policy work should begin immediately upon award of the grant in order to provide some significant results and baseline information for use by participants early in the Project schedule. Pima County and Region IX staff compared their initial concepts for potential WQRP research at this meeting and found many identical and overlapping research priorities. An informal "short list" of critical arid West research needs was developed at this meeting based on those priorities. As part of the planning process for the grant structure and content, Pima County staff and consultants reviewed the "short list" to recommend the two or three top priorities. The short list, and a more detailed description of tasks and issues for each of the short list projects developed in this review by Pima County can be found in Appendix 1.

Three projects from the short list have been identified for immediate implementation. A major rationale for selection of these projects was that the immediate implementation of these projects would expedite the effort of the Project staff and advisory groups by providing essential resource material early in the Project life. These projects would be implemented by Pima County as soon as the grant is awarded.

## Appendix 2

(Appendix 2 was removed at the October 24, 1995 "All Task Forces" meeting. Please see the Addendum for clarification.)

